DOCUMENT RESUME

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ABSTRACT

One of a series of pre-apprenticeship phase 1 training modules dealing with math skills, this self-paced student module convers metrics. Included in the module are the following: cover sheet listing module title, goals, and performance indicators; introduction; study guide/check list with directions for module completion; information sheet; self-assessment; self-assessment answers; and post assessment. Emphasis of the module is on the relationship between the metric system and the standard English system of measurement. (Other related pre-apprenticeship phase 1 training modules are available separately--see note.) (MN)

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PRG-APPRENTICESHIP
PHASE 1 TRAINING

MATH

METRICS

CE032930

Goal:

The student will understand the relationship between metric measurement and the standard English system, and will be able to convert values in one system to the other.

Performance Indicators:

Given a series of math problems in the Self Assessment and Post Assessment Portions of this module, the student will be able to successfully compute the answers.

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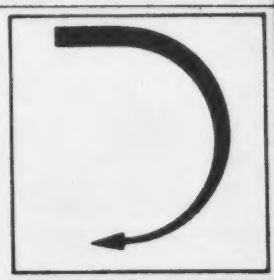


Introduction

Through the years more and more countries have begun using the metric system. The United States is changing from the English FPS (Foot-Pound-Second) system to SI metrics. It is therefore important that we become familiar with the metric units and their relationship to the familiar English units.

Study Guide

This study guide is designed to help you successfully complete this module. Check off the following steps to completion as you finish them.

STEPS TO COMPLETION

1. ____ Familiarize yourself with the Goal and Performance Indicators on the title page of this module.

2. ____ Read the Introduction and study the Information section of the module. It is intended to provide you with the math skills necessary to successfully complete the assessment portions.

3. ____ Complete the Self Assessment section of the module. You may refer to the Information section for help.

4. ____ Compare your Self Assessment answers with the correct answers on the Self Assessment Answer Sheet immediately following the Self Assessment exam. If you missed more than one of the Self Assessment exam questions, go back and re-study the necessary portions of the Information section, or ask your instructor for help. If you missed one or none of these problems, go on to step 5.

5. ____ Complete the Post Assessment section of the module. Show your answers to the instructor. It is recommended that you score 90% or better on those Post Assessment exams with 10 or more problems, or miss no more than one problem on those with fewer than 10 problems, before being allowed to go on to the next math module.

Information

The official name of the new metric system is "System International de Unite." Its abbreviation is "SI."

Although this module will not cover all of it, the following seven areas are those in which metrics come into play:

Quantity	SI Unit	SI Symbol
Length	metre	m
Mass (weight)	kilogram	kg
Time	second	s
Temperature	degree Kelvin	K
Electric current	ampere	A
Luminous intensity	candela	cd
Amount of substance	mole	mol

The area of measurement of length and distance is our primary concern here. Here are a few fundamentals of the metric system:

1 inch = 25.4 millimeters
= 2.54 centimeters
1 foot = 30.48 centimeters
= 3.048 decimeters
= 0.3048 meters

10 millimeters = 1 centimeter
10 centimeters = 1 decimeter
10 decimeters = 1 meter
10 meters = 1 decameter
10 decameters = 1 hectometer
10 hectometers = 1 kilometer

CONVERSIONS

The following information provides us with all we need to know about converting our system of inches, feet, yards, etc. to metric values:

inch x 25.4 = mm
inch x 2.5 = cm
inch x .025 = m
foot x 30.5 = cm
foot x 0.305 = m
yard x 0.91 = m
mile x 1.6 = km

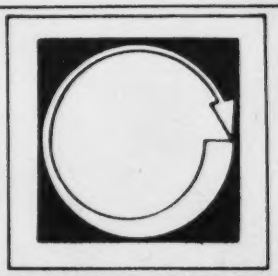
The following information enables us to convert metric values to inches, feet, yards, etc.:

millimeters (mm) x 0.039 = inches
centimeters (cm) x 0.39 = inches
meters (m) x 39.4 = inches
centimeters x 0.33 = feet
meters x 3.28 = feet
meters x 1.09 = yards
kilometers (km) x 0.62 = miles

Example: A board is 46 inches long. How many centimeters long is it?
The table tells us that if we want to convert inches to centimeters, we multiply the number of inches by the converstion factor of 2.5.
Answer: 46 inches x 2.5 = 115 cm

Example: A Swiss watch measures 21 millimeters across its face. How many inches is it?
The table tells us that if we want to convert millimeters to inches, we multiply the number of millimeters by the converstion factor of .039.
Answer: 21 mm x .039 = .819 inches

Self Assessment



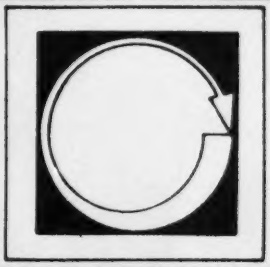
Complete the phrases below, referring to the Information section as necessary.

1. To determine how many millimemters are in an inch, you multiply by _____.
2. There are _____ centimeters in a meter.
3. _____ cm equals one inch.
4. A centimeter is _____ times as large as a mm.
5. A mm is _____ the size of a cm.
6. To determine how many cm are in a foot you would multiply _____ x _____ inches.
7. To determine how many millimeters are in a centimeter you would _____ by 10.
8. A meter consists of _____ feet.
9. A meter consists of _____ inches.
10. There are _____ mm in a meter.

Self Assessment Answers

1. 25.4
2. 100
3. 2.54
4. 10
5. one-tenth (1/10)
6. 2.5, 12
7. multiply
8. 3.28
9. 39.4
10. 1,000

Post Assessment



Compute the answers to the following problems and write the answers in the blanks.

1. 3 inches = _____ cm
2. 6.5 yards = _____ meters
3. 6.5 yards = _____ cm
4. 12.7 cm = _____ inches
5. 7 feet = _____ meters
6. 1 inch = _____ cm
7. 1 cm = _____ mm
8. 1 mm = _____ cm
9. 1 foot = _____ cm
10. 1500 cm = _____ ft.